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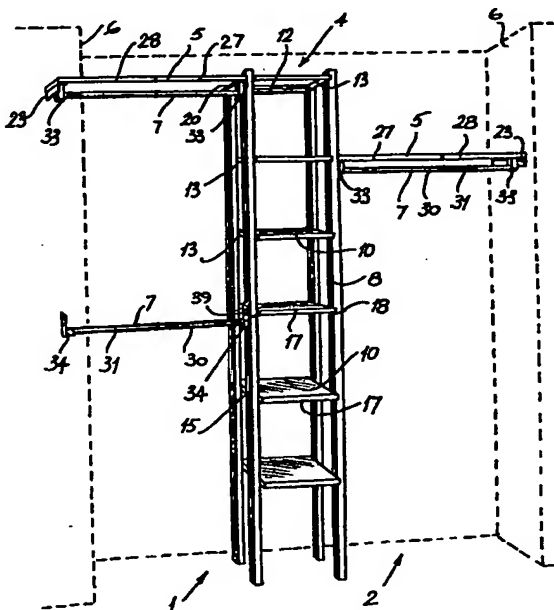
A shelf assembly.

The present invention relates to a shelf assembly for mounting in a closet.

The shelf assembly provides a unit which may be collapsed for ease of transportation and also has shelves the length of which may be varied to accommodate varying widths of closet.

Essentially, the shelf assembly (1) comprises a central shelf unit (4), which comprises four uprights (8) and a plurality of shelves (10) pivotally connected to the uprights (8). Sidewardly-projecting telescopic shelves (5) and telescopic clothes hanging rails (7) extend from the shelf unit (4) to side walls (6) of the closet (2). The sidewardly extending shelves (5) and telescopic rails (7) are supported on brackets (20, 23, 33, 34) attached to the uprights (8) of the central shelf unit (8) and wall (6). The shelf unit (4) may be collapsed for packaging with the movable shelves (10) lying substantially parallel to the uprights (8).

The length of the sidewardly projecting shelves (5) and telescopic rails (7) may be varied to accommodate varying widths of closet.



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The present invention relates to a shelf assembly, and in particular, to a shelf assembly for mounting in a wardrobe, alcove or closet, hereinafter referred to as closets.

Such shelf assemblies in general comprise a central shelf unit with a plurality of shelves and two sidewardly projecting shelves extending from the top of the unit to engage the side walls of the closet. Clothes hanging rails also project from the central unit to the side walls. These shelf assemblies have many advantages, they considerably increase the storage space in a closet and assist in keeping the closet tidy.

However, known shelf assemblies suffer from a number of disadvantages. Firstly, they tend to be cumbersome and difficult to transport, with the result that in general, it is essential that they be built on site. Unfortunately, the construction of such shelf assemblies tends to be complex, and too difficult for the average "do-it-yourself"

householder. Accordingly, a skilled man is normally required. This it will be appreciated, leads to considerable costs and inconvenience. Secondly, because most closets are of different internal dimensions, and particularly the widths of closets tend to vary, it is not possible to supply a standard unit which will fit in all closets. The variation in sizes is so vast that it is not even feasible to supply even a range of sizes of such shelf assemblies. Where attempts have been made to supply a range of sizes, it has been necessary for the purchaser to cut shelves to accommodate varying widths of alcoves, or alternatively, to insert filler pieces. This, it will be appreciated, leads to unsightly units.

Accordingly, there is no suitable shelf assembly units which may be readily easily fitted and erected in a closet.

Attempts have been made to provide shelves which are foldable to fit into small storage areas when not in use. However, no such known shelves are suitable for closets. For example. U.S. Patent Specifications Nos. 538145, 739085 and 1727048 disclose foldable shelves. It can clearly be seen from the U.S. Specifications that these shelves would not be suitable for use in a closet. U.S. Specifications Nos. 538145 and 739085 both disclose display stands which may be fixed with the shelves at varying angles, and when not in use the shelves in the unit may be folded. U.S. Patent Specification No. 1727048 discloses

folding shelves. This unit is suitable as a table or trolley. When not in use the shelves may be folded to fit into a small space. Clearly, none of these shelves are suitable for use in a closet.

It is an object of the invention to provide a shelf assembly which is easily transportable and which will readily easily fit into closets of varying internal dimensions.

According to the invention, there is provided a shelf assembly comprising a shelf unit, the shelf unit comprising at least one shelf supporting upright, at least one laterally extending shelf mounted on one side of the upright, the shelf being movable relative to the upright from a collapsed position with the plane of the shelf lying substantially parallel to the upright to an erected position with the plane of the shelf perpendicular to the upright, and shelf receiving means on the other side of the upright to receive a sidewardly projecting shelf extending from the shelf unit. Preferably, a plurality of laterally extending movable shelves are provided.

Preferably, the movable shelves are pivotally connected to the shelf supporting uprights.

Advantageously, four shelf supporting uprights are provided, two uprights being provided on each side of the movable shelves adjacent the corners thereof.

In one embodiment of the invention, the shelf assembly
5 comprises the sidewardly projecting shelf, and a wall bracket to support the other side of the sidewardly projecting shelf is provided.

Preferably, the sidewardly projecting shelves comprise two portions, one telescoping into the other to provide a
10 shelf of variable length.

Preferably, the sidewardly projecting shelves are provided on both sides of the shelf unit.

Advantageously, the shelf receiving means and the wall brackets are provided by an elongated angle bracket, and
15 the shelf receiving means extends between two uprights on one side of the shelf unit.

In a further embodiment of the invention, the shelf assembly comprises a clothes hanging rail extending sidewardly from the shelf unit to engage an adjacent wall. Preferably,
20 the clothes hanging rail comprises two elongated members, one telescoping into the other to provide a rail of variable length.

In a further embodiment of the invention the shelf supporting uprights are broken intermediate their ends, the broken ends being engagable with each other.

Advantageously, the shelf assembly is for mounting in a closet.

The advantages of the invention are many. However, in particular, one advantage of the invention is that because the shelf assembly may be folded to a collapsed position with the shelves substantially parallel to the shelf supporting uprights, it can readily easily be packed into a substantially flat carton for shipment. Because the shelves are pivotally connected to the uprights, the shelf assembly may be readily easily erected by pivoting the shelves relative to the uprights. Accordingly, the shelf assembly is particularly suitable for the "do-it-yourself" householder.

A further advantage of the invention is that because the sidewardly projecting shelves are telescopic, they may be extended to fit any width of alcove. Furthermore, because the clothes hanging rails are telescopic, these may similarly be extended to fit varying widths of closet. Accordingly, the need to cut components to length on site is eliminated. A further advantage is that because the uprights are broken intermediate their ends, the length of the package may be

reduced by half, if for example, the uprights are broken half-way.

These and other advantages and objects of the invention will be readily apparent from the following description of some preferred embodiments thereof, given by way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a shelf assembly according to the invention,

Fig. 2 is a perspective view of portion of the shelf assembly of Fig. 1 in the erected position,

Fig. 3 is a side view of the shelf assembly in the collapsed position,

Fig. 4 is a side view of a detail of Fig. 3,

Fig. 5 is a plan view of the portion of the shelf assembly of Fig. 2,

Fig. 6 is a sectional side view on the line VI-VI of Fig. 5,

Fig. 7 is a perspective view of a further detail of the shelf assembly of Fig. 1,

Fig. 8 is a perspective view of a further detail of the shelf assembly of Fig. 1,

5 Fig. 9 is a perspective view of a still further detail of the shelf assembly of Fig. 1,

Fig. 10 is a perspective view of the details of Figs. 8 and 9 assembled,

10 Fig. 11 is a perspective view of another detail of the shelf assembly of Fig. 1,

Fig. 12 is a sectional view of the detail of Fig. 11,

Fig. 13 is a perspective view of another detail of the shelf assembly of Fig. 1,

15 Fig. 14 is a perspective view of a still further detail of the shelf assembly of Fig. 1,

Fig. 15 is a perspective view of another detail of the shelf assembly of Fig. 1,

Fig. 16 is a sectional view of a detail of the shelf assembly of Fig. 1, showing the components of Figs. 14

and 15 assembled,

Fig. 17 is a perspective view of a further detail of the shelf assembly of Fig. 1,

5 Fig. 18 is a perspective view of another detail of the shelf assembly of Fig. 1,

Fig. 19 is a perspective view of a still further detail of the shelf assembly of Fig. 1,

Fig. 20 is a perspective view of a shelf assembly according to another embodiment of the invention,

10 Fig. 21 is a perspective view of a detail of the shelf assembly of Fig. 9, and

Fig. 22 is a perspective view of a detail of a shelf assembly according to another embodiment of the invention.

Referring to the drawings and initially to Figs. 1 to 19 there is provided a shelf assembly indicated generally by the reference numeral 1 for mounting in a closet 2 illustrated by broken lines. The shelf assembly comprises a central shelf unit 4 and sidewardly projecting shelves 5

which extend to side walls 6 of the closet 2. Clothes hanging rails 7 also extend from the shelf unit 3 to the to the side walls 6 of the closet 2.

5 The central shelf unit 3 comprises four shelf supporting uprights 8 of tubular square section steel and a plurality of shelves 10 of sheet metal. Pivot shafts 12 extending between the uprights 8 on opposing sides of the shelves 10 pivotally engage side lips 13 on the shelves 10. Star nuts 15 on the end of each pivot shaft 12 retain the shelves 10 and upright together. Washers 16 are provided between the shelves 10 and the uprights 8. Front and rear lips 17 are provided on the shelf 10 to conceal the pivot shafts 12. Because the shelves 10 are pivotally connected to the uprights 8 the central shelf unit can readily be pivoted 15 into a collapsed position as can be seen in Figs. 3 and 4, whereby the shelves 10 are substantially parallel to the uprights 8. This permits the shelf assembly to be packaged in a relatively flat carton for ease of transportation. Erection on site merely requires the shelves 10 to be 20 pivoted relative to the uprights in the direction of the arrow A of Fig. 4.

The shelf supporting uprights 8 are broken intermediate their ends, in this case substantially half-way between their ends at 18 and are engagable by means of a spigot 25 19 on one portion of upright 8 being engagable with bore of the other portion. Because the uprights 8 may be broken---

intermediate their ends, the shelf unit may be packaged in a relatively short carton which may be relatively easily carried.

Shelf receiving means to receive the sidewardly projecting shelves 4 are provided on the uprights 8 to support the shelves 5. In this case, the receiving means comprise angle brackets 20 of sheet metal material which are pivotal on appropriate pivot shafts 12, of the shelf unit 4, see Figs. 2 and 3. The other end of each shelf 5 is mounted to the wall 6 by means of a wall bracket 23 substantially similar to the bracket 20. Each shelf 4 is of sheet metal in two portions 27 and 28. The portion 28 telescopes into the portion 27 by means of runners 25 and 26 formed by bending the material of the shelves. This can clearly be seen in Figs. 11 and 12. Retaining clips 40 are provided to clamp the portions 27 and 28 of the shelves 5 together in the desired position. Each clip 40 is of U-shaped cross-section with a clamping screw 41 which clamps the runners 25 and 26 together, see Figs. 12 and 13.

The clothes hanging rails 7 also comprise two telescoping portions 30 and 31 and are supported by brackets 33 and 34. The brackets 33 are U-shaped and engage an aperture 36 in the brackets 20 and 23 and are engaged therein by lips 38 on the brackets 33, see Fig. 10. The lower clothes hanging rail 7 is supported on brackets 34 one of which is screwed to an upright 8 by self-tapping screws 39 and the

other to the wall 6 of the closet 2. The rails 7 are retained in the brackets 33 and 34 by plastic studs 24 which engage holes 35 and 37 in the ends of the rail 7 and the brackets 33 and 34.

- 5 End stops 63 are provided at the top and bottom ends of the uprights 8, see Figs. 18 and 19.

To erect the shelf assembly, the central shelf 4 is erected by pivoting the shelves 10 in the direction of the arrow A, see Fig. 4. The two portions of the shelf unit are
10 joined by joining the uprights 8 by means of the spigots 18. The erected unit 4 is positioned in the closet 2. The brackets 23 are secured to the wall. The rail support brackets 33 are then inserted in the respective apertures 36 in the brackets 20 and 23. The clothes hanging rails
15 7 are then extended to engage the brackets 33 and are secured by plastics studs 24 inserted through the holes 35 and 37.

The shelves 5 are then extended to the desired length so that they comfortably sit on the brackets 20 and 23. The
20 portions 27 and 28 of the shelves 5 are clamped by the clips 40.

The brackets 34 are secured to a respective upright 8 and the wall of the closet 2. Again, the rail 7 is extended to the desired length and secured in the brackets 34 by studs

24 similarly as just described.

It will be appreciated that because the shelves 10 and uprights 8 are pivotally connected together by the pivot shafts 12, the assembly may be readily easily erected.

5 Furthermore, it will be appreciated that because the shelves 5 and clothes hanging rails 7 are telescopic, any width of closet can be accommodated. Additionally, because the unit can be collapsed, the uprights are broken intermediate their ends and because the shelves 5 and rails

10 7 are telescopic, the entire assembly may be packed in a relatively short flat carton which can be readily easily carried.

Referring now to Figs. 20 and 21 there is illustrated a shelf assembly according to another embodiment of the inven-

15 tion. This shelf assembly is substantially similar to that described and similar components are identified by the same reference numerals. In this case, drawer supporting rails 60 are also pivotally connected to the uprights 8 by pivot screws 61. Drawers 62 are slidable on the rail 60. The

20 uprights 8 of the central shelf unit 4 of this embodiment of the invention are not broken intermediate their ends. The erection of this shelf assembly is substantially similar to that just described. The central unit 3 is erected by pivoting the shelves 10 and in this case the

25 rails 60 relative to the uprights 8. The drawers may then be inserted on the rail 60 and the remainder of the assembly

is substantially similar to that described.

Referring now to Fig. 22 there is illustrated a sidewardly projecting shelf 5 for use in a shelf assembly according to a still further embodiment of the invention. This shelf
5 5 may be used with either of the central shelf units illustrated in either Fig. 1 or Fig. 20. However, in this case, the rail 7 is suspended from the shelf 5 on brackets 65.

It will be appreciated that although the shelf assembly according to the invention has been described in each
10 embodiment of the invention as comprising four uprights, this is not necessary. Indeed, any number of shelf supporting uprights could be used, for example, in certain cases it is envisaged that only one shelf supporting upright may be required. Further, it is envisaged that the
15 uprights may in certain cases, be spaced away from the corners of the shelves 10.

Furthermore, it will be appreciated that while in the embodiments described above, the central unit has been described as being mounted in the centre of a closet, needless
20 to say, if desired, it could be mounted to one side of the closet or in any desired position.

Furthermore, it will be appreciated that while the sidewardly projecting shelves 5 and the rails 7 are described as being telescopic, while being desirable, this is not

necessary. Additionally, it will be appreciated that while specific brackets have been described for mounting the side-wardly projecting shelves 5 and the rail 7, other suitable brackets could be used if desired.

- 5 Additionally, it will be appreciated that while the shelf assembly has been described as being manufactured of metal and tubular steel, other suitable materials could be used, for example, it could be manufactured in timber or a plastics material, or a combination of all three if desired.
- 10 It is envisaged that when the shelf assembly is erected in a closet, it may be closed off from the rest of the room by doors or a curtain or the like on the closet.

Furthermore, it will be appreciated that instead of the shelves being pivotally connected to the uprights by means of
15 a pivot shaft, other suitable means could be used, for example, by screws.

Needless to say, it is envisaged that while the embodiment of the invention described with reference to Figs. 1 to 19 has been described with the shelf supports broken intermediate their ends, this is not necessary as has been described
20 in the embodiment of the invention described with reference to Figs. 20 and 21. Needless to say, however, it will be appreciated that if desired, to facilitate a shorter package of shelf assembly, the shelf supporting uprights could be

broken in a number of places intermediate their ends, thereby, providing a central portion in more than two sections, for example, three, four or more as desired.

It will also be appreciated that although the rails 7 have been illustrated in Fig. 1 as extending from the shelf unit adjacent the front uprights, this is not necessary, they could extend from the unit intermediate the front and rear uprights as illustrated in Figs. 20 and 21.

Furthermore, it will be appreciated that although the shelves 10 have been described as being pivotally connected to the uprights 8 by means of pivots shafts 12, any other suitable pivoting arrangement could be used, for example, pivot screws or the like.

While the shelf assembly has been described comprising a central shelf unit with a plurality of lateral shelves, it is envisaged that in certain cases the central shelf unit may only comprise one lateral shelf.

Furthermore, it is envisaged that the movable shelves of the central shelf unit could be made telescopic if desired. Additionally, the uprights could be telescopic also.

CLAIMS

1. A shelf assembly comprising a shelf unit (4), the shelf unit (4) comprising at least one shelf supporting upright (8), at least one laterally extending shelf (10) mounted on one side of the upright (8), the shelf (10) being movable relative to the upright (8) from a collapsed position with the plane of the shelf (10) lying substantially parallel to the upright (8) to an erected position with the plane of the shelf (10) perpendicular to the upright (8) characterized in that shelf receiving means (20) are provided on the other side of the upright (8) to receive a sidewardly projecting shelf (5) extending from the shelf unit (4).
5
2. A shelf assembly as claimed in claim 1 characterized in that a plurality of laterally extending movable shelves (10) are provided.
15
3. A shelf assembly as claimed in claim 1 or 2 characterized in that each movable shelf (10) is pivotally connected to the upright (8).
4. A shelf assembly as claimed in any preceding claim characterized in that four shelf supporting uprights (8) are provided, two uprights (8) being provided on each side of the movable shelves (10) adjacent the corners thereof.
20

5. A shelf assembly as claimed in any preceding claim characterized in that the shelf assembly also comprises the sidewardly projecting shelf (5), and a wall bracket (23) to support the other side of the sidewardly projecting shelf (5) is provided.

6. A shelf assembly as claimed in claim 5 characterized in that the sidewardly projecting shelf (5) comprises two portions (27,28), one telescoping into the other to provide a shelf (5) of variable length.

10 7. A shelf assembly as claimed in claims 5 or 6 characterized in that sidewardly projecting shelves (10) are provided on both sides of the shelf unit (4).

15 8. A shelf assembly as claimed in any preceding claim characterized in that the shelf receiving means (20) is provided by an elongated angle bracket (20) extending between two uprights (8) on one side of the shelf unit (4).

9. A shelf assembly as claimed in claim 5 characterized in that the wall bracket (23) is an elongated angle bracket.

20 10. A shelf assembly as claimed in any preceding claim characterized in that the shelf assembly also comprises a clothes hanging rail (7) extending sidewardly from the shelf unit (4) to engage an adjacent wall (6).

11. A shelf assembly as claimed in claim 10 characterized in that the clothes hanging rail (7) comprises two elongated members (30,31), one telescoping into the other to provide a rail (7) of variable length.

5 12. A shelf assembly as claimed in claim 10 or 11 characterized in that three clothes hanging rails (7) are provided, one on one side of the shelf unit (4), and two on the other side, one spaced apart above the other.

10 13. A shelf assembly as claimed in any of claims 10 to 12 characterized in that a support bracket (33) to support the clothes hanging rail is provided, the support bracket (33) being engagable with an aperture (36) in the receiving means (20).

15 14. A shelf assembly as claimed in any preceding claim characterized in that the shelf support upright (8) is broken intermediate (18) its ends, the broken ends being engagable with each other (19).

15. A shelf assembly as claimed in any preceding claim
20 characterized in that a pair of drawer support runners (60) pivotally mounted on the shelf supporting uprights (8) are provided to support a drawer (62).

16. A shelf assembly as claimed in any of the preceding claims for mounting in a closet (2).

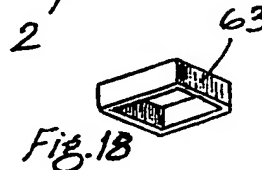


Fig. 19

63

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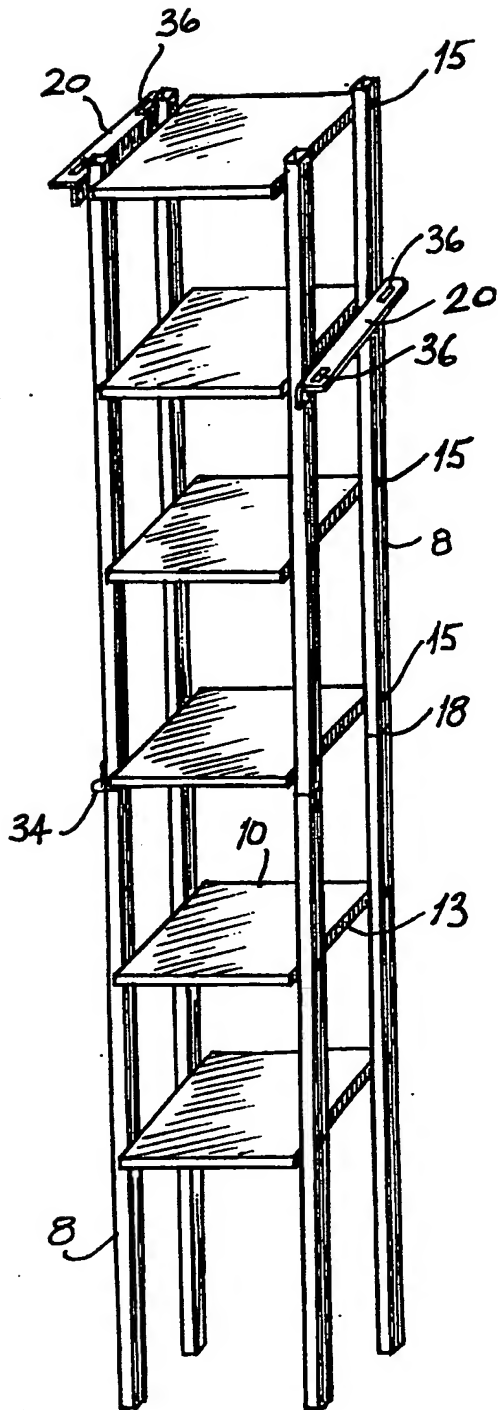


Fig. 2

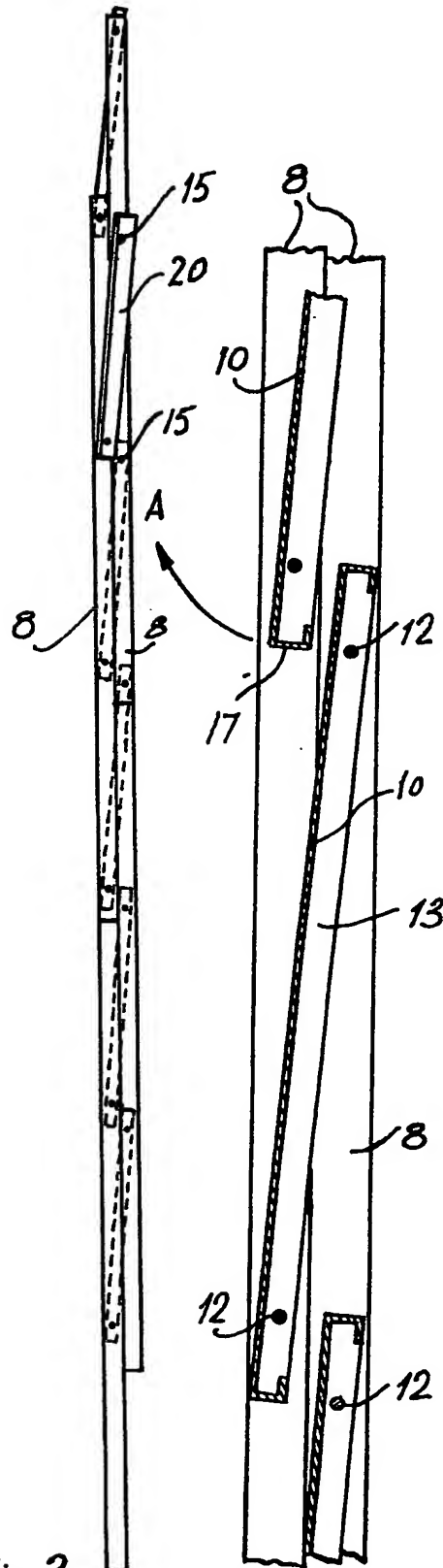


Fig. 3

Fig. 4

